



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/715,167	11/17/2003	Stephen Gold	100202863-2	4073
22879	7590	06/23/2006	EXAMINER	
HEWLETT PACKARD COMPANY P O BOX 272400, 3404 E. HARMONY ROAD INTELLECTUAL PROPERTY ADMINISTRATION FORT COLLINS, CO 80527-2400				FLOURNOY, HORACE L
ART UNIT		PAPER NUMBER		
2189				

DATE MAILED: 06/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/715,167	GOLD ET AL.	
	Examiner	Art Unit	
	Horace L. Flournoy	2189	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 06 April 2006.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) Claims 1-50 is/are pending in the application.
- 4a) Of the above claim(s) 8-11 and 18-39 is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) Claims 1-7, 12-17, and 40-50 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 17 November 2003 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11/17/2003</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____. |

DETAILED ACTION

Response to Election

This Office action has been issued in response to the election filed 6 April 2006.

Claims 1-7, 12-17, and 40-50 are pending. The examiner has considered the applicant's request that the examiner withdraw the Restriction Requirement. However, the examiner respectfully disagrees since applicant has not explained how "claims 8-11...are at least as applicable to the subject matter of Group I of 'controlling...split mode' as the subject matter of Group II..." The Restriction Requirement is hereby made FINAL.

ACKNOWLEDGEMENT OF REFERENCES CITED BY APPLICANT

As required by M.P.E.P. 609(c), the examiner acknowledges the applicant's submission of the Information Disclosure Statement dated 11/17/2003 and the cited reference has been considered in the examination of the claims now pending. As required by M.P.E.P. 609(c), a copy of the PTOL-1449 initialed and dated by the examiner is attached to the instant office action.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-7, 12-17, and 40-50 are rejected under 35 U.S.C. 102(e) as being anticipated by Bolt (U.S. Patent no. 6,766,412, hereafter referred to as Bolt). [The examiner notes that the corresponding P.G. Publication (2002/0144048) of Bolt can be cited as a 102(b) rejection.]

With respect to **independent claim 1**,

"A tape mirror interface [Bolt discloses, e.g. in column 8, line 38] comprising: an input terminal ([FIG. 4A, element 29: "host interface", see all associated text within the specification]) coupled to at least one input node ([FIG. 4A, element 12: "Host"]) and capable of receiving data transfer requests; [Bolt discloses in column 14, lines 16-19, "the host interface...data transfer can include e.g. transfer of information, requests, commands, responses, control signals, etc."] a plurality of output terminals coupled to a plurality of tape storage devices; [See FIG. 4A and column 18, lines 2-5. Also disclosed, e.g. in FIG.2A, elements 15, 17, and 145. See all associated text within specification regarding elements 15, 17, and 145.] and a control element coupled to the input terminal and plurality of output terminals, [FIG. 4A, element 25: "Microbridge" and element 35: "Routing and Protocol conversion logic", see all associated text within the specification] the control element

presenting the plurality of tape storage devices as separate media devices and selectively controlling data transfer in a synchronous mode so that writes to a target tape storage media are mirrored to a mirrored tape storage media, [Bolt discloses this limitation, e.g. in column 18, lines 2-5, “mirroring is a data duplication technique wherein a single incoming host request for I/O to a particular device 148 is transformed into two I/O requests for two physically separate devices 148 (mirrored pair).” Bolt also teaches “parallel SCSI” e.g. column 8, line 37.] and in a split mode so that writes are written to the tape storage devices independently.” [Bolt discloses in column 16, line 66 – column 17, line 2, “the control logic 35 in a microbridge 25 can continue to split the data stream and forward the data stream onto the redundant devices (e.g. the mirror device or the parity device)” See also column 19, lines 15-31.]

With respect to **independent claims 12 and 40**,

“A command interface controller for usage in a tape storage array comprising: a command interpreter capable of identifying at least one interface command; [Bolt discloses in column 14, lines 16-19, “the host interface...data transfer can include e.g. transfer of information, requests, commands, responses, control signals, etc.”] and a control element responsive to the identified at least one interface command and selectively controlling data transfer in a synchronous mode so that writes to a target tape storage media are mirrored to a mirrored tape storage media, [Bolt discloses this limitation, e.g. in column 18, lines 2-5, “mirroring is a data duplication technique wherein a single incoming

host request for I/O to a particular device 148 is transformed into two I/O requests for two physically separate devices 148 (mirrored pair).” Bolt also teaches “parallel SCSI” e.g. column 8, line 37.] and in a split mode so that writes are written to individual tape storage media independently.” [Bolt discloses in column 16, line 66 – column 17, line 2, “the control logic 35 in a microbridge 25 can continue to split the data stream and forward the data stream onto the redundant devices (e.g. the mirror device or the parity device)” See also column 19, lines 15-31.]

With respect to **independent claim 45**,

“A data protection system capable of storing data on a plurality of tape drives comprising: an interface capable of transferring data from at least one data source to the plurality of tape drives; [FIG. 3D, element 25: “Data Transfer Device Interface”] a data mover coupled to the interface and capable of moving data from source to destination, [FIG. 3D, elements 144 and 146: “Loader Controller/Library Controller”] bypassing intermediate system elements; and a tape mirror coupled to the interface and coupled to the data mover, the tape mirror presenting the plurality of tape drives as separate media devices, receiving data from the data mover, and selectively transferring the data in a synchronous mode so that writes to a target tape media are mirrored to a mirrored tape media, [Bolt discloses this limitation, e.g. in column 18, lines 2-5, “mirroring is a data duplication technique wherein a single incoming host request for I/O to a particular device 148 is transformed into two I/O requests for two physically separate devices 148 (mirrored pair).” Bolt also teaches

“parallel SCSI” e.g. column 8, line 37.] and in a split mode so that writes are written to tape drives independently.” [Bolt discloses in column 16, line 66 – column 17, line 2, “the control logic 35 in a microbridge 25 can continue to split the data stream and forward the data stream onto the redundant devices (e.g. the mirror device or the parity device)” See also column 19, lines 15-31.]

With respect to **independent claim 50**,

“A data protection system for usage in a tape storage array comprising: means for identifying at least one interface command; and means responsive to the identified at least one interface command [disclosed in column 10, lines 23-43] for selectively controlling data transfer in a synchronous mode so that writes to a target tape storage media are mirrored to a mirrored tape storage media, [Bolt discloses this limitation, e.g. in column 18, lines 2-5, “mirroring is a data duplication technique wherein a single incoming host request for I/O to a particular device 148 is transformed into two I/O requests for two physically separate devices 148 (mirrored pair).” Bolt also teaches “parallel SCSI” e.g. column 8, line 37.] and in a split mode so that writes are written to tape storage media independently.” [Bolt discloses in column 16, line 66 – column 17, line 2, “the control logic 35 in a microbridge 25 can continue to split the data stream and forward the data stream onto the redundant devices (e.g. the mirror device or the parity device)” See also column 19, lines 15-31.]

With respect to **claim 4**,

"The tape mirror interface according to claim 1 wherein: the control element is implemented in a software Application Programming Interface (API) [Bolt discloses "NDMP API" in column 8, line 42] executable on an external host computer." [Bolt discloses "host environment 12" in column 8, line 27. See FIG. 4A, and all associated text within specification.]

With respect to **claim 5**,

"The tape mirror interface according to claim 1 wherein: the control element is implemented in a hardware Small Computer Systems Interface (SCSI) Logical Unit (LUN) [Bolt teaches this limitation in column 13, lines 32-40] enabling mirror configuration commands to be transferred as SCSI commands."
[disclosed in column 10, lines 23-43]

With respect to **claim 6**,

"The tape mirror interface according to claim 1 wherein: the control element is implemented in a hardware out-of-band management interface." [Bolt discloses in column 13, lines 58-61, "Another mode of communication is out-of-band management via e.g. RS 232 or Ethernet, wherein management commands are sent over a physically separate interface than normal data transfers."]

With respect to **claim 7**,

"The tape mirror interface according to claim 1 wherein: the control element is implemented in a hardware Local Area Network (LAN) based control interface

using a Transmission Control Protocol/Internet Protocol (TCP/IP) management protocol.” [Bolt discloses in column 10, lines 57-60, “protocol conversions such as NDMP (Network Data Management Protocol) over TCP/IP to SCSI, iSCSI over TCP/IP to SCSI, and Fibre Channel Protocol to SCSI, etc. are possible.”]

With respect to **claim 13**,

“The command interface according to claim 12 wherein: the control element presents a plurality of tape storage devices and corresponding media in the tape storage array to an external device that issues commands as separate and individual tape storage devices and media.” [disclosed in column 10, lines 10-23]

With respect to **claims 14 (and 41)**,

“The command interface according to claim 12 wherein: the command interpreter identifies a MODE command; and the control element responds to the MODE command by designating whether the command interface controller supports tape mirror functionality and whether tape mirror functionality is enabled or disabled.” [Bolt discloses in column 18, lines 54-60, “The microbridges 25 have many operational parameters which may be altered or inspected by e.g. the library controller 146. These include...mirroring enable/disable,”]

With respect to **claims 15, (and 2, 42),**

"The command interface according to claim 12 wherein: the command interpreter identifies a SYNC command; [Bolt discloses this limitation, e.g. in column 18, lines 2-5, "mirroring is a data duplication technique wherein a single incoming host request for I/O to a particular device 148 is transformed into two I/O requests for two physically separate devices 148 (mirrored pair)."

Bolt also teaches "parallel SCSI" e.g. column 8, line 37.] and the control element responds to the SYNC command by enabling mirror functionality and synchronously writing data to a primary tape storage device and to a secondary tape storage device with data discrepancies between the primary tape storage device and the secondary tape storage device being preserved." [Bolt discloses this limitation, e.g. in column 18, lines 2-5, "mirroring is a data duplication technique wherein a single incoming host request for I/O to a particular device 148 is transformed into two I/O requests for two physically separate devices 148 (mirrored pair)." Bolt also teaches "parallel SCSI" e.g. column 8, line 37.]

With respect to **claims 16 (and 43),**

"The command interface according to claim 12 wherein: the command interpreter identifies a SYNC command; and the control element responds to the SYNC command by determining whether less than two tape storage devices are coupled to the command interface and, if so, returning an error message." [Bolt discloses this limitation, e.g. in column 18, lines 2-5, "mirroring is a data duplication technique wherein a single incoming host request for I/O to a

particular device 148 is transformed into two I/O requests for two physically separate devices 148 (mirrored pair).” Bolt also teaches “parallel SCSI” e.g. column 8, line 37.]

With respect to **claims 17 (and 3, 44)**,

“The command interface according to claim 12 wherein: the command interpreter identifies a SPLIT command; and the control element responds to the SPLIT command by disabling mirror functionality and writing to a primary tape storage device and to a secondary tape storage device separately.” [Bolt discloses in column 16, line 66 – column 17, line 2, “the control logic 35 in a microbridge 25 can continue to split the data stream and forward the data stream onto the redundant devices (e.g. the mirror device or the parity device)” See also column 19, lines 15-31.]

With respect to **claim 46**,

“The data protection system according to claim 45 further comprising: a buffer [FIG. 4A, element 35: “Routing and Protocol Conversion Logic”, and all associated text within specification. See column 8, lines 34-42] coupled to the data mover [FIG. 3D, element 25: “microbridge”] and coupled to the tape mirror, the buffer capable of receiving data from the data mover and the mirror and splitting the data into multiple write streams for transfer to a plurality of tape drives.” [Bolt discloses in column 16, line 66 – column 17, line 2, “the control logic 35 in a microbridge 25 can continue to split the data stream

and forward the data stream onto the redundant devices (e.g. the mirror device or the parity device)" See also column 19, lines 15-31.]

With respect to **claim 47**,

"The data protection system according to claim 45 wherein: the interface is a Fibre-Channel to SCSI bridge; and the data mover is an XCOPY SCSI command." [disclosed in column 10, lines 23-43]

With respect to **claim 48**,

"The data protection system according to claim 45 wherein: the interface is a bridge selected from among a group of bridges comprising: a bridge between external Fibre Channel (FC) hosts and internal Small Computer Systems Interface (SCSI) devices; a bridge between external FC devices and internal FC devices; [disclosed, e.g. in column 18, lines 12-26] a bridge between external internet SCSI (iSCSI) devices and internal SCSI devices; a bridge between external internet SCSI (iSCSI) devices and internal FC devices; and a bridge between external iSCSI devices and internal iSCSI devices." [disclosed in column 10, lines 23-43 and column 11, lines 1-23]

With respect to **claim 49**,

"The data protection system according to claim 45 further comprising: a buffer coupled to the interface, [FIG. 4A, element 35]: "Routing and Protocol Conversion Logic", and all associated text within specification. See column 8, lines 34-42] the data mover, [FIG. 3D, element 25]: "Data Transfer

Device Interface”] and the tape mirror; [Bolt discloses, e.g. in column 8, line 38] and a control process capable of executing, in at least one control element buffer, a plurality of actions comprising: controlling the interface to read data from a data source into the buffer using data mover functionality; [FIG. 3D, element 25: “Data Transfer Device Interface”. See all related text within specification] controlling the data mover to detect whether the tape mirror is enabled; [Bolt discloses in column 18, lines 54-60, “The microbridges 25 have many operational parameters which may be altered or inspected by e.g. the library controller 146. These include...mirroring enable/disable,”] controlling the tape mirror, if enabled, to generate duplicate writes to at least two tape drives attached to the interface from the buffer.” [Bolt discloses in column 16, line 66 – column 17, line 2, “the control logic 35 in a microbridge 25 can continue to split the data stream and forward the data stream onto the redundant devices (e.g. the mirror device or the parity device)” See also column 19, lines 15-31.]

CONCLUSION

Direction of Future Correspondences

Any inquiry concerning this communication or earlier communication from the examiner should be directed to Horace L. Flournoy whose telephone number is (571) 272-2705. The examiner can normally be reached on Monday through Friday 8:00 AM to 5:30 PM (ET).

Important Note

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Reginald G. Bragdon can be reached on (571) 272-4204. The fax phone numbers for the organization where this application or proceeding is assigned is (703) 746-7239.

Information regarding the status of an Application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or PUBLIC PAIR. Status information for unpublished applications is available through Private Pair only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-2100.

Horace L. Flournoy

Patent Examiner
Art unit: 2189



Reginald G. Bragdon
Reginald G. Bragdon

Supervisory Patent Examiner
Technology Center 2100